History of

SPACE COMMAND
ADCOM

JANUARY-DECEMBER 1984

Chapter II

MISSILE WARNING

This paragraph is not within the scope of your request.

Sensors

The Defense Support Program

The Defense Support Program (DSP) experienced an eventful year of service. Although many problems were encountered and solved during what was a troublesome period for the program, DSP successfully continued to provide vital TW/AA data to NORAD. It was a time when the system's operators amply demonstrated their resourcefulness and the satellites' versatility while awaiting the arrival of a new generation of sensors with markedly improved capabilities to surveil and warn of threat activity from most points on the earth.

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Mounting both infrared (IR) sensors to detect rocket exhaust signatures and radiation sensors to register nuclear detonations (NUDETS) on earth or in space, the satellites were judged capable (under optimum conditions) of detecting a Soviet ICBM

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DSP enjoyed an additional valuable capability. b(1)

On a non-interference basis, b(1)

A U.S. Navy collection team at the Overseas Ground Station in Australia

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Although no corresponding USAF program existed for

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The raw sensor data transmitted by the DSP satellites was processed and relayed to the CMC by a network of three ground control/receiver stations. DSP-East reported to the Overseas Ground Station (OGS) at Nurrangar, Australia, located approximately 300 miles northwest of Adelaide. The OGS reported to the CMC via either earth or space-based communications links. DSP-East data could also be processed from the Simplified Processing Station (SPS). b(1)

The twin satellites of DSP-West were directed by the CONUS Ground Station (CGS) at

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DSP operations proceeded routinely early in the new year until

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Concern over satellite functioning yielded to greater concern for ground station operations when, on 31 January, b(

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The CGS commander took corrective action by personally briefing his crews on the errors contributing to the incident and issued a policy letter that reiterated adherence to checklist procedures, proper use of encryption documents, and the necessity for positive crew management. The crew member who passed the incorrect OPS CAP was decertified, retrained, and recertified. In the CMC all crews were briefed by J-31 with emphasis on the need for positive crew management, exchange of information between the MWC and NCP, and the need for individual crew knowledge and understanding of CGS and DDC operations and capabilities.[5]

The constellation reacted to a change in the threat profile on 27 March when Flight 10 was shifted b(1)

Arriving on station on 5 April, the satellite remained in that orbit for the rest of the year in response to a joint decision by the OJCS, CINCSAC, CINCLANT and CINCNORAD. There were no resultant gaps in Flight 10's previous surveillance zone, as it was already under dual coverage with Flight 9.[6]

In April a new satellite joined the network. Flight 11 was launched on the 14th and succeeded Flight 9 at b(1)

~~By~~ that time both Flights 6 and 7 had suffered a loss in command confidence by mis-identifying several missile launches. b(1)

Reports from OGS and SPS b(1)

Software enhancements featuring improved profiles were already scheduled for the last quarter of CY 84, and a complete review of the DSP deployment was underway at the time of the incident in an effort to correct this and other system deficiencies. The errors made on 13 April were quickly identified by the CMC, and no changes to force posturing resulted. b(1)

The alarms of April faded, and in May the DSP constellation returned to routine operations. b(1)

Eastern hemisphere coverage showed signs of degradation again the following month as b(1)

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The satellite remained inoperative through June, experiencing additional problems in the form of a fuel leak from its plenum pressure chamber, and by the 28th it had lost its primary commanding system as the second crypto unit power supply failed.[8]

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The same day CINCNORAD responded to the deteriorating situation by issuing a launch call for Flight 12. Nine days later Flight 7 was in position and relieved Flight 9.

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The ground stations were also experiencing problems in July.

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Faulty test procedures were blamed for the CGS outage.

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Both sites revised their operations and maintenance procedures in the light of this incident.[10]

August seemed to promise some relief to harried crew controllers at the OGS as testing of manual Fly-by-Wire control procedures began in an effort to restore full capabilities to Flight 9.

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By September, a Fly-by-Wire command sequence had been developed to give the OGS low level attitude control over Flight 9, but both ground stations continued to experience difficulties with their charges. b(1)

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Once again, simple aging of the sensor was the basic cause of the problem.[12]

On 5 October a team from Space Command/DOMD succeeded in restoring Flight 9 to full operational capability from the OGS by utilizing automatic Fly-by-Wire procedures, but other problems soon arose.

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Defective or not, Flight 7 remained as the primary Eastern asset until Flight 9 returned to service on 9 November, having b(1) Flight 7 then assumed the role of DSP-East reserve satellite.

The shuffling of satellites ended in December as the outrider of a new company of satellite sensors roared aloft from Cape Kennedy and joined the DSP constellation at b(1) Flight 12 was also designated as a Sensor Evolutionary Development (SED) vehicle, a prototype of the next-generation DSP-1 satellite family. The DSP-1 vehicles would include Flights 14-17, with the first satellite expected to be in operation by September 1987.

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scanned the earth below in the Pacific and eastern surveillance zones. Although the system remained viable, CINCNORAD was concerned about the ever-changing nature of the threat it guarded against. In a late-November address to the Defense Resources Board, General Herres stressed that DSP system improvements had b(1)

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The new DSP-1 satellites were confidently regarded as solving many of the enduring problems encountered in warning and data acquisition. The upgrades planned for the program's ground elements also promised to enhance its capabilities. The Peripheral Upgrade Program, designed to furnish new computer equipment to the OGS and CGS, remained under planning and discussion during 1984. Equipment installation start was scheduled for late 1985, and when completed the PUP should provide significant improvement to each ground station's means of monitoring and configuring its operations.[16]

In anticipation of Flight 12 and its successors, Sensor Evolutionary Development (SED) software was installed in the CGS and OGS in October and December. The new software was expected to ease the transition to controlling the more advanced satellites as they came into service. Physical upgrades were also planned for the OGS and CGS as they prepared to monitor future system enhancements that would require additional space for personnel and equipment. Construction, heating, cooling, and power plant improvements were thus scheduled. By year's end the facilities upgrade program had received Air Staff funding and the designs were completed. Ground breaking was scheduled for the spring of 1985, with beneficial occupancy possible by FY 86.[17]

Of all the system upgrades planned or in progress, the most significant was the Mobile Ground System. No matter how sophisticated the orbiting satellites might become, their ground links to the CMC were both few and vulnerable. All three ground stations were vulnerable to neutralization by a wide variety of methods. The only way to make the system truly survivable was to field a network of mobile ground stations. b(1)

custom-designed support vehicles to allow deployed field operations.

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Remaining paragraphs are not within the scope of your request.